APPENDIX D

DATA VALIDATION REPORTS

LABORATORY DATA CONSULTANTS, INC.
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Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Scott Brehmer

June 14, 2004

SUBJECT: NASA JPL, DO #01, Data Validation

Dear Mr. Brehmer,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 4, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 12047:

SDG #	Fraction
04-2752, 04-2758, 04-2778, 04-2793, 04-2809	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 29, 2004

LDC Report Date: June 11, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2752

Sample Identification

EB-1-4/29/04
MW-19-1
MW-19-2
MW-19-3
MW-19-4
MW-19-5
TB-1-4/29/04
MW-19-3MS
MW-19-3MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/5/04	2-Butanone	61.71	All samples in SDG 04-2752	J (all detects) UJ (all non-detects)	P

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-1-4/29/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-1-4/29/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2752

SDG	Sample	Compound	Flag	A or P	Reason
04-2752	EB-1-4/29/04 MW-19-1 MW-19-2 MW-19-3 MW-19-4 MW-19-5 TB-1-4/29/04	2-Butanone	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2752

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 30, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2758

Sample Identification

EB-2-4/30/04
MW-21-1
MW-21-2
MW-21-3
MW-21-4
MW-21-5
TB-2-4/30/04
MW-21-1MS
MW-21-1MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/5/04	2-Butanone	61.71	EB-2-4/30/04 MW-21-1 MW-21-2 MW-21-1MS MW-21-1MSD 04G2187-MB-01	J (all detects) UJ (all non-detects)	P

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
04G2188-MB-01	5/6/04	Methylene chloride	1.0 ug/L	MW-21-4 MW-21-5 TB-2-4/30/04

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-2-4/30/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-2-4/30/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2758

SDG	Sample	Compound	Flag	A or P	Reason
04-2758	EB-2-4/30/04 MW-21-1 MW-21-2	2-Butanone	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2758

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 3, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2778

Sample Identification

EB-3-5/3/04
MW-20-1
MW-20-2
MW-20-3
MW-20-4
MW-20-5
TB-3-5/3/04
MW-20-2MS
MW-20-2MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
04G2188-MB-01	5/6/04	Methylene chloride	1.0 ug/L	All samples in SDG 04-2778

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-3-5/3/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-3-5/3/04 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-3-5/3/04	m,p-Xylenes	0.5

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2778

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2778

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 4, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2793

Sample Identification

EB-4-5/4/04
MW-18-1
MW-18-2
MW-18-3
MW-18-4
MW-18-5
TB-4-5/4/04
MW-18-4MS
MW-18-4MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
04G2188-MB-01	5/6/04	Methylene chloride	1.0 ug/L	All samples in SDG 04-2793

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-4-5/4/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-4-5/4/04 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-4-5/4/04	m,p-Xylenes	0.4

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2793

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2793

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 5, 2004

LDC Report Date: June 9, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2809

Sample Identification

EB-5-5/5/04
MW-17-1
MW-17-2
MW-17-3
MW-17-4
MW-17-5
TB-5-5/5/04
MW-17-5MS
MW-17-5MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-5-5/5/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-5-5/5/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2809

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2809

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 5, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2809

Sample Identification

MW-17-4

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-Dioxane contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG 04-2809

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG 04-2809

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 29, 2004

LDC Report Date: June 11, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2752

Sample Identification

EB-1-4/29/04
MW-19-1
MW-19-2
MW-19-3
MW-19-4
MW-19-5
MW-19-3MS
MW-19-3MSD
MW-19-3DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Potassium	101 ug/L	All samples in SDG 04-2752
ICB/CCB	Calcium Chromium Iron Magnesium Potassium Sodium	282.07 ug/L 0.236 ug/L 65.53 ug/L 202.47 ug/L 122.46 ug/L 260.84 ug/L	All samples in SDG 04-2752

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-1-4/29/04	Calcium Chromium Iron Potassium Sodium	197 ug/L 0.57 ug/L 136 ug/L 104 ug/L 383 ug/L	197U ug/L 0.57U ug/L 136U ug/L 104U ug/L 383U ug/L

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-19-1	Chromium	0.58 ug/L	0.58U ug/L
MW-19-4	Iron	158 ug/L	158U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits.

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
MW-19-3L	Potassium	12.3 (≤10)	All samples in SDG 04-2752	J (all detects)	A

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-1-4/29/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-1-4/29/04	Chromium	0.57
	Calcium	197
	Iron	136
	Potassium	104
	Sodium	383

NASA JPL
Metals - Data Qualification Summary - SDG 04-2752

SDG	Sample	Analyte	Flag	A or P	Reason
04-2752	EB-1-4/29/04 MW-19-1 MW-19-2 MW-19-3 MW-19-4 MW-19-5	Potassium	J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2752

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2752	EB-1-4/29/04	Calcium Chromium Iron Potassium Sodium	197U ug/L 0.57U ug/L 136U ug/L 104U ug/L 383U ug/L	A
04-2752	MW-19-1	Chromium	0.58U ug/L	A
04-2752	MW-19-4	Iron	158U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 30, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2758

Sample Identification

EB-2-4/30/04
MW-21-1
MW-21-2
MW-21-3
MW-21-4
MW-21-5
MW-21-1MS
MW-21-1MSD
MW-21-1DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
5/4/04	CCV	Arsenic	110.8 (90-110)	MW-21-3 MW-21-4 MW-21-5	J (all detects)	A

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Potassium	101 ug/L	All samples in SDG 04-2758
ICB/CCB	Calcium Chromium Iron Magnesium Potassium Sodium	282.07 ug/L 0.236 ug/L 65.53 ug/L 202.47 ug/L 122.46 ug/L 260.84 ug/L	All samples in SDG 04-2758

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-2-4/30/04	Calcium Iron Magnesium Potassium Sodium	100 ug/L 148 ug/L 9.9 ug/L 121 ug/L 411 ug/L	100U ug/L 148U ug/L 9.9U ug/L 121U ug/L 411U ug/L
MW-21-1	Iron	295 ug/L	295U ug/L
MW-21-3	Iron	318 ug/L	318U ug/L
MW-21-4	Iron	274 ug/L	274U ug/L
MW-21-5	Iron	227 ug/L	227U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not reviewed in this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
MW-19-3L	Potassium	12.3 (≤10)	All samples in SDG 04-2758	J (all detects)	A

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-2-4/30/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-2-4/30/04	Chromium	2.1
	Lead	0.25
	Calcium	100
	Iron	148
	Magnesium	9.9
	Potassium	121
	Sodium	411

NASA JPL
Metals - Data Qualification Summary - SDG 04-2758

SDG	Sample	Analyte	Flag	A or P	Reason
04-2758	MW-21-3 MW-21-4 MW-21-5	Arsenic	J (all detects)	P	Calibration (%R)
04-2758	EB-2-4/30/04 MW-21-1 MW-21-2 MW-21-3 MW-21-4 MW-21-5	Potassium	J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2758

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2758	EB-2-4/30/04	Calcium Iron Magnesium Potassium Sodium	100U ug/L 148U ug/L 9.9U ug/L 121U ug/L 411U ug/L	A
04-2758	MW-21-1	Iron	295U ug/L	A
04-2758	MW-21-3	Iron	318U ug/L	A
04-2758	MW-21-4	Iron	274U ug/L	A
04-2758	MW-21-5	Iron	227U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 3, 2004

LDC Report Date: June 9, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2778

Sample Identification

EB-3-5/3/04
MW-20-1
MW-20-2
MW-20-3
MW-20-4
MW-20-5
MW-20-2MS
MW-20-2MSD
MW-20-2DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
5/4/04	CCV	Arsenic	110.8 (90-110)	EB-3-5/3/04 MW-20-1 MW-20-2 MW-20-3	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Potassium	91.6 ug/L	All samples in SDG 04-2778
ICB/CCB	Calcium Chromium Iron Magnesium Potassium Sodium	115.40 ug/L 0.271 ug/L 4.11 ug/L 23.89 ug/L 162.33 ug/L 277.59 ug/L	All samples in SDG 04-2778

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-3-5/3/04	Magnesium Potassium Sodium	17.1 ug/L 112 ug/L 560 ug/L	17.1U ug/L 112U ug/L 560U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
MW-18-4DUP (All samples in SDG 04-2778)	Chromium	29.5 (≤20)	-	J (all detects) UJ (all non-detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not reviewed in this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
MW-20-2L	Chromium	10.4 (≤10)	All samples in SDG 04-2778	J (all detects)	A

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-3-5/3/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-3-5/3/04	Chromium	2.1
	Lead	0.19
	Iron	39.0
	Magnesium	17.1
	Potassium	112
	Sodium	560

NASA JPL
Metals - Data Qualification Summary - SDG 04-2778

SDG	Sample	Analyte	Flag	A or P	Reason
04-2778	EB-3-5/3/04 MW-20-1 MW-20-2 MW-20-3	Arsenic	J (all detects)	P	Calibration (%R)
04-2778	EB-3-5/3/04 MW-20-1 MW-20-2 MW-20-3 MW-20-4 MW-20-5	Chromium	J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)
04-2778	EB-3-5/3/04 MW-20-1 MW-20-2 MW-20-3 MW-20-4 MW-20-5	Chromium	J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2778

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2778	EB-3-5/3/04	Magnesium Potassium Sodium	17.1U ug/L 112U ug/L 560U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 4, 2004

LDC Report Date: June 9, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2793

Sample Identification

EB-4-5/4/04
MW-18-1
MW-18-2
MW-18-3
MW-18-4
MW-18-5
MW-18-4MS
MW-18-4MSD
MW-18-4DUP
MW-18-4DUPRE

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
5/10/04	CCV	Arsenic	114.4 (90-110)	MW-18-1 MW-18-2 MW-18-3 MW-18-5	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Potassium	91.6 ug/L	All samples in SDG 04-2793
ICB/CCB	Calcium Chromium Iron Magnesium Potassium Sodium	200.49 ug/L 0.271 ug/L 78.35 ug/L 199.44 ug/L 162.33 ug/L 277.59 ug/L	All samples in SDG 04-2793

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-4-5/4/04	Calcium Iron Magnesium Potassium Sodium	117 ug/L 16.7 ug/L 11.4 ug/L 109 ug/L 415 ug/L	117U ug/L 16.7U ug/L 11.4U ug/L 109U ug/L 415U ug/L
MW-18-1	Iron	328 ug/L	328U ug/L
MW-18-2	Iron	265 ug/L	265U ug/L
MW-18-3	Iron	105 ug/L	105U ug/L
MW-18-5	Iron	123 ug/L	123U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
MW-18-4DUP (All samples in SDG 04-2793)	Chromium	29.5 (≤20)	-	J (all detects) UJ (all non-detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not reviewed in this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
MW-20-2L	Chromium	10.4 (≤10)	All samples in SDG 04-2793	J (all detects)	A

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-4-5/4/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-4-5/4/04	Chromium	1.7
	Lead	0.081
	Calcium	117
	Iron	16.7
	Magnesium	11.4
	Potassium	109
	Sodium	415

NASA JPL
Metals - Data Qualification Summary - SDG 04-2793

SDG	Sample	Analyte	Flag	A or P	Reason
04-2793	MW-18-1 MW-18-2 MW-18-3 MW-18-5	Arsenic	J (all detects)	P	Calibration (%R)
04-2793	EB-4-5/4/04 MW-18-1 MW-18-2 MW-18-3 MW-18-4 MW-18-5	Chromium	J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)
04-2793	EB-4-5/4/04 MW-18-1 MW-18-2 MW-18-3 MW-18-4 MW-18-5	Chromium	J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2793

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2793	EB-4-5/4/04	Calcium Iron Magnesium Potassium Sodium	117U ug/L 16.7U ug/L 11.4U ug/L 109U ug/L 415U ug/L	A
04-2793	MW-18-1	Iron	328U ug/L	A
04-2793	MW-18-2	Iron	265U ug/L	A
04-2793	MW-18-3	Iron	105U ug/L	A
04-2793	MW-18-5	Iron	123U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 5, 2004

LDC Report Date: June 10, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2809

Sample Identification

EB-5-5/5/04
MW-17-1
MW-17-2
MW-17-3
MW-17-4
MW-17-5
MW-17-5MS
MW-17-5MSD
MW-17-5DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
5/10/04	CCV	Arsenic	114.4 (90-110)	EB-5-5/5/04 MW-17-1 MW-17-2 MW-17-3 MW-17-4	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium Potassium	0.11 ug/L 107 ug/L	All samples in SDG 04-2809
ICB/CCB	Calcium Chromium Iron Lead Magnesium Potassium	211.50 ug/L 0.451 ug/L 2.43 ug/L 0.021 ug/L 28.06 ug/L 313.28 ug/L	All samples in SDG 04-2809

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-5-5/5/04	Chromium Lead Magnesium Potassium	0.19 ug/L 0.023 ug/L 33.0 ug/L 125 ug/L	0.19U ug/L 0.023U ug/L 33.0U ug/L 125U ug/L
MW-17-2	Lead	0.009 ug/L	0.009U ug/L
MW-17-4	Potassium	1540 ug/L	1540U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not reviewed in this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-5-5/5/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-5-5/5/04	Chromium	0.19
	Lead	0.023
	Iron	19.8
	Magnesium	33.0
	Potassium	125
	Sodium	275

NASA JPL
Metals - Data Qualification Summary - SDG 04-2809

SDG	Sample	Analyte	Flag	A or P	Reason
04-2809	EB-5-5/5/04 MW-17-1 MW-17-2 MW-17-3 MW-17-4	Arsenic	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2809

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2809	EB-5-5/5/04	Chromium Lead Magnesium Potassium	0.19U ug/L 0.023U ug/L 33.0U ug/L 125U ug/L	A
04-2809	MW-17-2	Lead	0.009U ug/L	A
04-2809	MW-17-4	Potassium	1540U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 29, 2004

LDC Report Date: June 11, 2004

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2752

Sample Identification

EB-1-4/29/04
MW-19-1
MW-19-2
MW-19-3
MW-19-4
MW-19-5
MW-19-3MS
MW-19-3MSD
MW-19-5DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-1-4/29/04 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-1-4/29/04	pH Chloride Nitrate as N	6.20 units 0.18 mg/L 0.074 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG 04-2752

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 04-2752

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 30, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2758

Sample Identification

EB-2-4/30/04
MW-21-1
MW-21-2
MW-21-3
MW-21-4
MW-21-5
MW-21-1MS
MW-21-1MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-2-4/30/04 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-2-4/30/04	pH Chloride Nitrate as N	6.89 units 0.15 mg/L 0.13 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG 04-2758

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 04-2758

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 3, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2778

Sample Identification

EB-3-5/3/04
MW-20-1
MW-20-2
MW-20-3
MW-20-4
MW-20-5
MW-20-1DUP
MW-20-2MS
MW-20-2MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-3-5/3/04 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-3-5/3/04	pH Chloride Nitrate as N	6.85 units 0.15 mg/L 0.13 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG 04-2778

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 04-2778

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 4, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2793

Sample Identification

EB-4-5/4/04
MW-18-1
MW-18-2
MW-18-3
MW-18-4
MW-18-5
MW-18-1DUP
MW-18-4MS
MW-18-4MSD
MW-18-5DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG 04-2793)	Perchlorate	-	-	34 (≤20)	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-4-5/4/04 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-4-5/4/04	pH Chloride Nitrate as N	6.25 units 0.17 mg/L 0.12 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG 04-2793

SDG	Sample	Analyte	Flag	A or P	Reason
04-2793	EB-4-5/4/04 MW-18-1 MW-18-2 MW-18-3 MW-18-4 MW-18-5	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 04-2793

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 5, 2004

LDC Report Date: June 8, 2004

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2809

Sample Identification

EB-5-5/5/04
MW-17-1
MW-17-2
MW-17-3
MW-17-4
MW-17-5
MW-17-1DUP
MW-17-5MS
MW-17-5MSD
MW-17-5DUP

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (EB-5-5/5/04 MW-17-1 MW-17-2 MW-17-3 MW-17-4)	Perchlorate	-	-	34 (≤20)	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-5-5/5/04 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-5-5/5/04	pH Total dissolved solids Chloride Nitrate as N	6.32 units 5.0 mg/L 0.15 mg/L 0.066 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG 04-2809

SDG	Sample	Analyte	Flag	A or P	Reason
04-2809	EB-5-5/5/04 MW-17-1 MW-17-2 MW-17-3 MW-17-4	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 04-2809

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Scott Brehmer

June 22, 2004

SUBJECT: NASA JPL, DO #12, Data Validation

Dear Mr. Brehmer,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 14, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 12082:

SDG #	Fraction
04-2845, 04-2865, 04-2918, 04-2947, 04-2953	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

The data validation was performed under EPA Level III and Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 6, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2845

Sample Identification

Dupe-1-2Q04**
EB-6-5/6/04
MW-3-1
MW-3-2
MW-3-3
MW-3-4
MW-3-5
MW-14-1
MW-14-2
MW-14-3
MW-14-4
MW-14-5
TB-6-5/6/04
MW-3-1MS
MW-3-1MSD

**Indicates sample underwent EPA Level IV review

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples Dupe-1-2Q04** and MW-3-1 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-6-5/6/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-6-5/6/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2845

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2845

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 10, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2865

Sample Identification

Dupe-2-2Q04**
EB-7-5/10/04
MW-22-1
MW-22-2
MW-22-3
MW-22-4
MW-22-5
TB-7-5/10/04

**Indicates sample underwent EPA Level IV review

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples Dupe-2-2Q04** and MW-22-5 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-7-5/10/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-7-5/10/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2865

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2865

No Sample Data Qualified in this SDG

LDC Report# 12082C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 13, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2918

Sample Identification

Dupe-5-2Q04**
EB-10-5/13/04
MW-11-1
MW-11-2
MW-11-3
MW-11-4
MW-11-5
TB-10-5/13/04

**Indicates sample underwent EPA Level IV review

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/19/04	Bromomethane	39.6	All samples in SDG 04-2918	J (all detects) UJ (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples Dupe-5-2Q04** and MW-11-3 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-10-5/13/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-10-5/13/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2918

SDG	Sample	Compound	Flag	A or P	Reason
04-2918	Dupe-5-2Q04** EB-10-5/13/04 MW-11-1 MW-11-2 MW-11-3 MW-11-4 MW-11-5 TB-10-5/13/04	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2918

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 17, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2947

Sample Identification

EB-11-5/17/04
MW-23-1
MW-23-2
MW-23-3
MW-23-4
MW-23-5
TB-11-5/17/04
MW-23-2MS
MW-23-2MSD

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/19/04	Bromomethane	39.6	All samples in SDG 04-2865	J (all detects) UJ (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-11-5/17/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-11-5/17/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2947

SDG	Sample	Compound	Flag	A or P	Reason
04-2947	EB-11-5/17/04 MW-23-1 MW-23-2 MW-23-3 MW-23-4 MW-23-5 TB-11-5/17/04	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2947

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 18, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2953

Sample Identification

EB-12-5/18/04
MW-24-1
MW-24-2
MW-24-3
MW-24-4
MW-24-5
TB-12-5/18/04

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/21/04	Bromomethane	58.3	All samples in SDG 04-2953	J (all detects) UJ (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-12-5/18/04 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-12-5/18/04 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG 04-2953

SDG	Sample	Compound	Flag	A or P	Reason
04-2953	EB-12-5/18/04 MW-24-1 MW-24-2 MW-24-3 MW-24-4 MW-24-5 TB-12-5/18/04	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 04-2953

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 18, 2004

LDC Report Date: June 18, 2004

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2953

Sample Identification

MW-24-1

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-Dioxane contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG 04-2953

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG 04-2953

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 6, 2004

LDC Report Date: June 15, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2845

Sample Identification

Dupe-1-2Q04**
EB-6-5/6/04
MW-3-1
MW-3-2
MW-3-3
MW-3-4
MW-3-5
MW-14-1
MW-14-2
MW-14-3
MW-14-4
MW-14-5
MW-14-5MS
MW-14-5MSD
MW-14-5DUP

**Indicates sample underwent EPA Level IV review

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 04-2845	Arsenic	Initial calibration verification (ICV) was not performed for this analyte.	ICV must be performed for this analyte.	J (all detects) UJ (all non-detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium Potassium	0.11 ug/L 70.6 ug/L	All samples in SDG 04-2845
ICB/CCB	Arsenic Calcium Chromium Iron Lead Magnesium Potassium Sodium	3.00 ug/L 259.61 ug/L 0.451 ug/L 30.35 ug/L 0.021 ug/L 78.92 ug/L 342.50 ug/L 285.14 ug/L	All samples in SDG 04-2845

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-6-5/6/04	Arsenic Calcium Chromium Iron Lead Magnesium Potassium Sodium	3.3 ug/L 437 ug/L 0.55 ug/L 39.1 ug/L 0.021 ug/L 22.2 ug/L 97.5 ug/L 600 ug/L	3.3U ug/L 437U ug/L 0.55U ug/L 39.1U ug/L 0.021U ug/L 22.2U ug/L 97.5U ug/L 600U ug/L
MW-3-3	Arsenic	4.8 ug/L	4.8U ug/L
MW-3-4	Arsenic Lead	3.7 ug/L 0.014 ug/L	3.7U ug/L 0.014U ug/L
MW-3-5	Arsenic	6.4 ug/L	6.4U ug/L
MW-14-2	Arsenic Iron	2.6 ug/L 123 ug/L	2.6U ug/L 123U ug/L
MW-14-3	Arsenic Iron	2.9 ug/L 115 ug/L	2.9U ug/L 115U ug/L
MW-14-4	Iron	83.5 ug/L	83.5U ug/L
MW-14-5	Arsenic	3.2 ug/L	3.2U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for samples reviewed by Level III criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples Dupe-1-2Q04** and MW-3-1 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	Dupe-1-2Q04**	MW-3-1	
Calcium	50800	49700	2

Analyte	Concentration (ug/L)		RPD
	Dupe-1-2Q04**	MW-3-1	
Chromium	8.2	7.6	8
Iron	790	460	53
Magnesium	21000	20700	1
Potassium	3120	3130	0
Sodium	22900	22800	0

XIV. Field Blanks

Sample EB-6-5/6/04 was identified as an equipment blank. No metals were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-6-5/6/04	Chromium	0.55
	Lead	0.021
	Arsenic	3.3
	Calcium	437
	Iron	39.1
	Magnesium	22.2
	Potassium	97.5
	Sodium	600

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Metals - Data Qualification Summary - SDG 04-2845

SDG	Sample	Analyte	Flag	A or P	Reason
04-2845	Dupe-1-2Q04** EB-6-5/6/04 MW-3-1 MW-3-2 MW-3-3 MW-3-4 MW-3-5 MW-14-1 MW-14-2 MW-14-3 MW-14-4 MW-14-5	Arsenic	J (all detects) UJ (all non-detects)	P	Calibration

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2845

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2845	EB-6-5/6/04	Arsenic Calcium Chromium Iron Lead Magnesium Potassium Sodium	3.3U ug/L 437U ug/L 0.55U ug/L 39.1U ug/L 0.021U ug/L 22.2U ug/L 97.5U ug/L 600U ug/L	A
04-2845	MW-3-3	Arsenic	4.8U ug/L	A
04-2845	MW-3-4	Arsenic Lead	3.7U ug/L 0.014U ug/L	A
04-2845	MW-3-5	Arsenic	6.4U ug/L	A
04-2845	MW-14-2	Arsenic Iron	2.6U ug/L 123U ug/L	A
04-2845	MW-14-3	Arsenic Iron	2.9U ug/L 115U ug/L	A
04-2845	MW-14-4	Iron	83.5U ug/L	A
04-2845	MW-14-5	Arsenic	3.2U ug/L	A

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Metals - Field Blank Data Qualification Summary - SDG 04-2845

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 10, 2004

LDC Report Date: June 16, 2004

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 04-2865

Sample Identification

Dupe-2-2Q04**
EB-7-5/10/04
MW-22-1
MW-22-2
MW-22-3
MW-22-4
MW-22-5
MW-22-5MS
MW-22-5MSD
MW-22-5DUP

**Indicates sample underwent EPA Level IV review

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 04-2865	Arsenic	Initial calibration verification (ICV) was not performed for this analyte.	ICV must be performed for this analyte.	J (all detects) UJ (all non-detects)	P

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
5/12/04	CCV (15:04)	Chromium	111.3 (90-110)	Dupe-2-2Q04** MW-22-5 MW-22-5MS MW-22-5MSD MW-22-5DUP	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead Magnesium Potassium Sodium	0.013 ug/L 39.2 ug/L 106 ug/L 657 ug/L	All samples in SDG 04-2865

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Arsenic Calcium Chromium Iron Lead Magnesium Potassium Sodium	3.00 ug/L 115.57 ug/L 0.480 ug/L 13.87 ug/L 0.045 ug/L 75.86 ug/L 122.97 ug/L 867.64 ug/L	All samples in SDG 04-2865

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
Dupe-2-2Q04**	Lead	0.039 ug/L	0.039U ug/L
EB-7-5/10/04	Calcium Chromium Iron Lead Magnesium Potassium Sodium	115 ug/L 0.34 ug/L 36.8 ug/L 0.010 ug/L 12.9 ug/L 140 ug/L 1060 ug/L	115U ug/L 0.34U ug/L 36.8U ug/L 0.010U ug/L 12.9U ug/L 140U ug/L 1060U ug/L
MW-22-1	Lead	0.020 ug/L	0.020U ug/L
MW-22-4	Arsenic	3.0 ug/L	3.0U ug/L
MW-22-5	Arsenic Lead	2.7 ug/L 0.017 ug/L	2.7U ug/L 0.017U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for samples reviewed by Level III criteria.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
Dupe-3-2Q04A	Iron Potassium	17.3 (≤10) 15.5 (≤10)	All samples in SDG 04-2865	J (all detects) J (all detects)	A

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples Dupe-2-2Q04** and MW-22-5 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	Dupe-2-2Q04**	MW-22-5	
Arsenic	5U	2.7	200
Calcium	5750	5710	1
Chromium	4.6	2.6	56
Iron	106	109	3
Lead	0.039	0.017	79
Magnesium	994	993	0
Potassium	968	966	0
Sodium	68300	69800	2

XIV. Field Blanks

Sample EB-7-5/10/04 was identified as an equipment blank. No metal contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-7-5/10/04	Chromium	0.34
	Lead	0.010
	Calcium	115
	Iron	36.8
	Magnesium	12.9
	Potassium	140
	Sodium	1060

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Metals - Data Qualification Summary - SDG 04-2865

SDG	Sample	Analyte	Flag	A or P	Reason
04-2865	Dupe-2-2Q04** EB-7-5/10/04 MW-22-1 MW-22-2 MW-22-3 MW-22-4 MW-22-5	Arsenic	J (all detects) UJ (all non-detects)	P	Initial calibration
04-2865	Dupe-2-2Q04** MW-22-5	Chromium	J (all detects)	P	Continuing calibration (%R)
04-2865	Dupe-2-2Q04** EB-7-5/10/04 MW-22-1 MW-22-2 MW-22-3 MW-22-4 MW-22-5	Iron Potassium	J (all detects) J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG 04-2865

SDG	Sample	Analyte	Modified Final Concentration	A or P
04-2865	Dupe-2-2Q04**	Lead	0.039U ug/L	A
04-2865	EB-7-5/10/04	Calcium Chromium Iron Lead Magnesium Potassium Sodium	115U ug/L 0.34U ug/L 36.8U ug/L 0.010U ug/L 12.9U ug/L 140U ug/L 1060U ug/L	A
04-2865	MW-22-1	Lead	0.020U ug/L	A
04-2865	MW-22-4	Arsenic	3.0U ug/L	A
04-2865	MW-22-5	Arsenic Lead	2.7U ug/L 0.017U ug/L	A

NASA JPL
Metals - Field Blank Data Qualification Summary - SDG 04-2865

No Sample Data Qualified in this SDG